11. Personnel Monitoring Devices

Regulations: 180 NAC 4-005, 180 NAC 4-006, 180 NAC 4-011, 180 NAC 4-012, 180 NAC 4-022.

Criteria: *Applicants must do either of the following:*

- *Provide dosimetry processed and evaluated by a National Voluntary Laboratory Accreditation Program (NVLAP) approved processor that is exchanged at a frequency recommended by the processor.*

OR

- *Maintain, for inspection by the Agency, documentation demonstrating that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10 percent of the allowable limits. Annual Dose limits for radiation workers 180 NAC 4-005:*

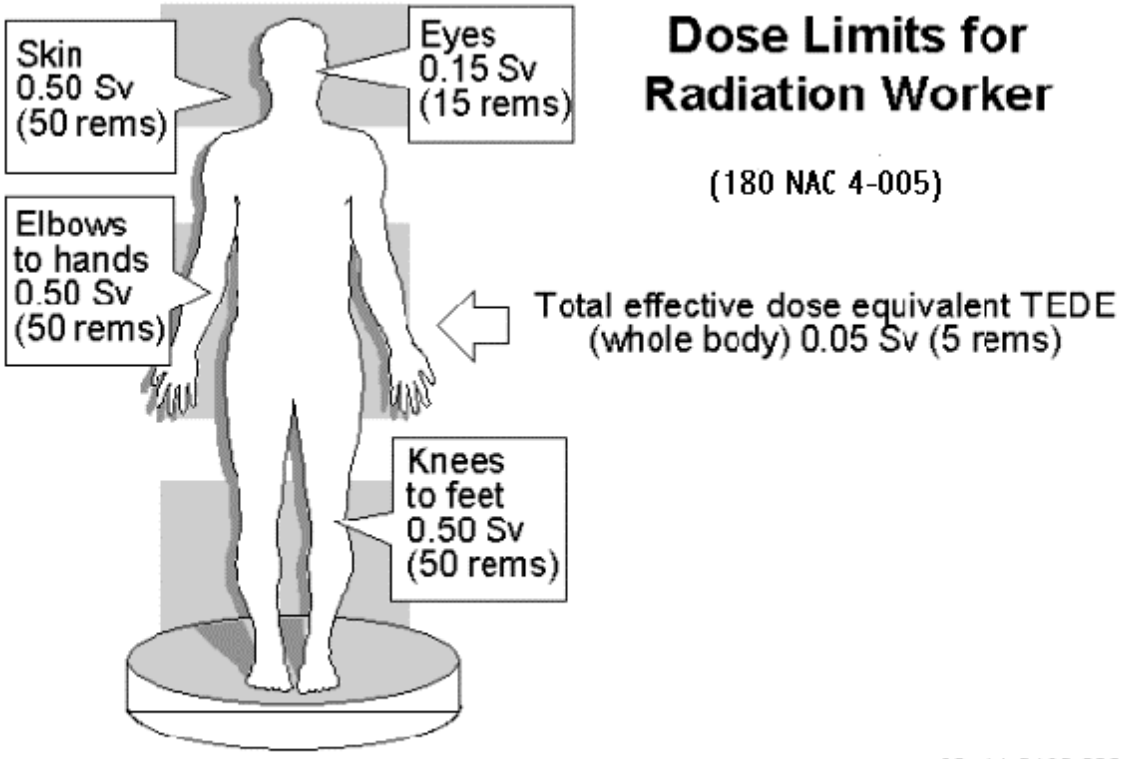
Skin
0.50 Sv
(50 rems)
Eyes
0.15 Sv
(15 rems)
Elbows
to hands
0.50 Sv
(50 rems)
Total effective dose equivalent TEDE
(whole body) 0.05 Sv (5 rems)
Knees
to feet
0.50 Sv
(50 rems)
Dose Limits for
Radiation Worker
(180 NAC 4-005)
62-pt4-9162-320a
100297

FIGURE 5 **Annual Dose Limits for Occupationally Exposed Adults.**

Under conditions of routine use, the typical fixed gauge user does not require a personnel monitoring device (dosimetry). A gauge user also does not require dosimetry when proper emergency procedures are used. Appendix M provides guidance on performing a prospective evaluation demonstrating that fixed gauge users are not likely to exceed 10% of the limits as shown in Figure 5 and thus, are not required to have personnel dosimetry.

Individuals who perform non-routine operations such as installation, initial radiation survey, repair, and maintenance of components related to the radiological safety of the gauge, gauge relocation, replacement, and disposal of sealed sources, alignment, or removal of a gauge from service are more likely to exceed 10% of the limits as shown in Figure 5. Applicants may be required to provide dosimetry (whole body and perhaps extremity monitors) to individuals performing such services or must perform a prospective evaluation demonstrating that unmonitored individuals performing such non-routine operations are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits as shown in Figure 5.

Part 1 of Appendix M provides guidance on preparing a written evaluation demonstrating that users are not likely to exceed 10 percent of the applicable limits and thus, are not required to have personnel dosimetry.

When personnel monitoring is needed, most licensees use either film badges, optically stimulated luminance dosimeters (OSLD) or thermoluminescent dosimeters (TLDs) that are supplied by a NVLAP-approved processor. The exchange frequency for film badges is usually monthly due to technical concerns about film fading. The exchange frequency for TLDs and OSLDs is usually quarterly. Applicants should verify that the processor is NVLAP-approved. Consult the NVLAP-approved processor for its recommendations for exchange frequency and proper use. A list of NVLAP accredited dosimetry vendors is available on the Internet at http://ts.nist.gov/ts/htdocs/210/214/scopes/dosim.htm

Each order of badges includes a control badge for measuring the amount of background radiation the badges receive each monitoring period and radiation received during shipping. This enables the control badge's reading to be subtracted from the total reading to provide an accurate record of each worker's occupational exposure. When not in use, personnel monitoring badges should be stored with the control badge to ensure accurate dosimetry records. **The control badge should be stored in a radiation free area**. The control badge must be returned with the other personnel monitoring badges each monitoring period.

Response from Applicant: Provide either of the following:

- A statement that: "We will provide dosimetry processed and evaluated by a NVLAP approved processor that is exchanged at a frequency recommended by the processor."

  "We will be using the following type:
  □ Film Badge □ TLD □ OSLD □ Other (Specify)_____
  The supplier is: _____

The exchange frequency is:

□ Monthly □ Quarterly □ Other (Specify)

OR

- A statement that: "We will maintain, for inspection by the Agency, documentation demonstrating that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10 percent of the allowable limits of 180 NAC 4"

  Note: See Appendix M for guidance on demonstrating that unmonitored individuals are not likely to exceed 10 percent of the allowable limits.